

00133.US1.ST25.txt
SEQUENCE LISTING

<110> Roberds, Steven L.
Benjamin, Christopher
Karnovsky, Alla M.
Ruble, Cara L.

<120> Human Ion Channels

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<151> 2000-05-10

<150> 60/207,092

<151> 2000-05-25

<150> 60/206,526

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<150> 60/216,893

<151> 2000-07-17

<150> 60/237,873

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<213> Homo sapiens

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<212> DNA

<213> Homo sapiens

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 <213> Homo sapiens

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 attgtgttca ttgctttcaa gttggtgcaa aacaggctga ttgacatata caaaaatggt 900
 atgctattct ttgcaaaagg gaagttttac caccttggtta aaaagtga 948

<210> 39
 <211> 861
 <212> DNA
 <213> Homo sapiens

<400> 39
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 ttctctgcca ttgaggacgg ccaggctctg gtggcagcag atgatggaga gtttgagaag 180
 ttcttgagg agctctgcag aatcttgaac tgcagtgaaa cagtgggtgga agacagaaaa 240
 caggatctcc aggggcatct gcagaagggtg aagcctcagt ggtttaacag gaccacacac 300
 tggtccttcc tgagctcgtt ctttttctgc tgcacggtgt tcagcacctg gggctatggc 360
 tacatctacc ccgtcaccag gcttggcaag tacttggtca tgctctatgc tctctttggt 420
 atccccctga tgctcctgt tctcacggac acaggcgaca tcttggcaac catcttatct 480
 acatcttata atcggttccg aaaattccct ttctttaccg gccccctctt ctccaagtgg 540
 ttggacatcc ccctcccat cattgccctt attgtttttg cctacatttc ctgtgcagct 600
 gccatcctcc cttctgga gacacagttg gatttcgaga atgccttcta tttctgcttt 660
 gtcacactca ccaccattgg gtttgggat actgttttag aacaccctaa cttcttctg 720
 ttcttctcca tttatatcat cgttggaatg gagattgtgt tcattgcttt caagttggtg 780
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<210> 40
 <211> 75
 <212> PRT
 <213> Homo sapiens

<400> 40

Gly Tyr Gly Asn Ile Ala Pro Ser Thr Glu Gly Gly Lys Ile Phe Cys
 1 5 10 15
 Ile Leu Tyr Ala Ile Phe Gly Ile Pro Leu Phe Gly Phe Leu Leu Ala
 20 25 30
 Gly Ile Gly Asp Gln Leu Gly Thr Ile Phe Gly Lys Ser Ile Ala Arg
 35 40 45
 Val Glu Lys Val Phe Arg Val Ser Thr Val Ser Tyr Leu Asn Ser Asn
 50 55 60
 His Cys Asp Pro Ile Gly Phe Ser Leu Thr Gly
 65 70 75

<210> 41
 <211> 35
 <212> PRT
 <213> Homo sapiens

<400> 41

Ile Gly Tyr Gly His Ala Ala Pro Gly Thr Asp Ser Gly Lys Asp Phe
 1 5 10 15

Cys Met Phe Gly Gly Val Gly Ile Pro Leu Thr Leu Val Thr Phe Gln
 20 25 30

Ser Leu Gly
 35

<210> 42
 <211> 173
 <212> PRT
 <213> Homo sapiens

<400> 42

Gly Lys Ile Phe Leu Ile Phe Tyr Gly Leu Val Gly Cys Ser Ser Thr
 1 5 10 15

Ile Leu Phe Phe Asn Leu Phe Leu Glu Arg Leu Ile Thr Ile Ile Ala
 20 25 30

Tyr Ile Met Lys Ser Cys His Gln Arg Gln Leu Arg Arg Arg Gly Ala
 35 40 45

Leu Pro Gln Glu Ser Leu Lys Asp Ala Gly Gln Cys Glu Val Asp Ser
 50 55 60

Leu Ala Gly Trp Lys Pro Ser Val Tyr Tyr Val Met Leu Ile Leu Cys
 65 70 75 80

Thr Ala Ser Ile Leu Ile Ser Cys Cys Ala Ser Ala Met Tyr Thr Pro
 85 90 95

Ile Glu Gly Trp Ser Tyr Phe Asp Ser Leu Tyr Phe Cys Phe Val Ala
 100 105 110

Phe Ser Thr Ile Gly Phe Gly Asp Leu Val Ser Ser Gln Asn Ala His
 115 120 125

Tyr Glu Ser Gln Gly Leu Tyr Arg Phe Ala Asn Phe Val Phe Ile Leu
 130 135 140

Met Gly Val Cys Cys Ile Tyr Ser Leu Phe Asn Val Ile Ser Ile Leu
 145 150 155 160

Ile Lys Gln Ser Leu Asn Trp Ile Leu Arg Lys Met Asp
 165 170

<210> 43
 <211> 37
 <212> PRT
 <213> Homo sapiens

<400> 43

Pro Pro Met Val Phe Ser His Val Glu Gly Trp Ser Phe Ser Glu Gly

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1           5           10           15
Phe Tyr Phe Ala Phe Ile Thr Leu Ser Thr Ile Gly Phe Gly Asp Tyr
      20           25           30

Val Val Gly Glu Asn
      35

<210> 44
<211> 55
<212> PRT
<213> Homo sapiens

<400> 44

Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu Gly Lys Tyr Leu Cys
1           5           10           15

Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met Phe Leu Val Leu Thr
      20           25           30

Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser Thr Ser Tyr Asn Arg
      35           40           45

Phe Arg Lys Phe Pro Phe Phe
      50           55

<210> 45
<211> 141
<212> PRT
<213> Homo sapiens

<220>
<221> misc_feature
<222> (87)..(97)
<223> Xaa is any amino acid

<400> 45

Gly Phe Gly Met Thr Thr Pro Ala Thr Val Gly Gly Lys Ala Phe Leu
1           5           10           15

Ile Ala Tyr Gly Leu Phe Gly Cys Ala Gly Thr Ile Leu Phe Phe Asn
      20           25           30

Leu Phe Leu Glu Arg Ile Ile Ser Leu Leu Ala Phe Ile Met Arg Ala
      35           40           45

Cys Arg Glu Arg Gln Leu Arg Arg Ser Gly Leu Leu Pro Ala Thr Phe
      50           55           60

Arg Arg Gly Ser Ala Leu Ser Glu Ala Asp Ser Leu Ala Gly Trp Lys
      65           70           75           80

Pro Ser Val Tyr His Val Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
      85           90           95

Xaa Ser Cys Cys Ala Ser Ala Met Tyr Thr Ser Val Glu Gly Trp Asp
      100          105          110

Tyr Val Asp Ser Leu Tyr Phe Leu Leu Arg His Leu Gln His His Arg
      115          120          125

Phe Gly Asp Leu Val Ser Ser Gln His Ala Ala Tyr Arg

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130

135

140

<210> 46
 <211> 140
 <212> PRT
 <213> Homo sapiens
 <400> 46

Ile Met Lys Ser Cys His Gln Arg Gln Leu Arg Arg Arg Gly Ala Leu
 1 5 10 15
 Pro Gln Glu Ser Leu Lys Asp Ala Gly Gln Cys Glu Val Asp Ser Leu
 20 25 30
 Ala Gly Trp Lys Pro Ser Val Tyr Tyr Val Met Leu Ile Leu Cys Thr
 35 40 45
 Ala Ser Ile Leu Ile Ser Cys Cys Ala Ser Ala Met Tyr Thr Pro Ile
 50 55 60
 Glu Gly Trp Ser Tyr Phe Asp Ser Leu Tyr Phe Cys Phe Val Ala Phe
 65 70 75 80
 Ser Thr Ile Gly Phe Gly Asp Leu Val Ser Ser Gln Asn Ala His Tyr
 85 90 95
 Glu Ser Gln Gly Leu Tyr Arg Phe Ala Asn Phe Val Phe Ile Leu Met
 100 105 110
 Gly Val Cys Cys Ile Tyr Ser Leu Phe Asn Val Ile Ser Ile Leu Ile
 115 120 125
 Lys Gln Ser Leu Asn Trp Ile Leu Arg Lys Met Asp
 130 135 140

<210> 47
 <211> 75
 <212> PRT
 <213> Homo sapiens
 <400> 47

Gly Tyr Gly Asn Ile Ala Pro Ser Thr Glu Gly Gly Lys Ile Phe Cys
 1 5 10 15
 Ile Leu Tyr Ala Ile Phe Gly Ile Pro Leu Phe Gly Phe Leu Leu Ala
 20 25 30
 Gly Ile Gly Asp Gln Leu Gly Thr Ile Phe Gly Lys Ser Ile Ala Arg
 35 40 45
 Val Glu Lys Val Phe Arg Val Ser Thr Val Ser Tyr Leu Asn Ser Asn
 50 55 60
 His Cys Asp Pro Ile Gly Phe Ser Leu Thr Gly
 65 70 75

<210> 48
 <211> 54
 <212> PRT
 <213> Homo sapiens
 <400> 48

Gly Tyr Gly Asn Val Ala Leu Arg Thr Asp Ala Gly Arg Leu Phe Cys
1 5 10 15

Ile Phe Tyr Ala Leu Val Gly Ile Pro Leu Phe Gly Ile Leu Leu Ala
20 25 30

Gly Val Gly Asp Arg Leu Gly Ser Ser Leu Arg His Gly Ile Gly His
35 40 45

Ile Glu Ala Ile Phe Leu
50

<210> 49

<211> 118

<212> PRT

<213> Homo sapiens

<220>

<221> misc_feature

<222> (8)..(22)

<223> Xaa is any amino acid

<400> 49

Asp His Tyr Leu Glu Tyr Gly Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa Xaa Xaa Xaa Xaa His Trp Leu Ala Cys Ile Trp Tyr Ser Ile
20 25 30

Gly Asp Tyr Glu Val Ile Asp Glu Val Thr Asn Thr Ile Gln Ile Asp
35 40 45

Ser Trp Leu Tyr Gln Leu Ala Leu Ser Ile Gly Thr Pro Tyr Arg Tyr
50 55 60

Asn Thr Ser Ala Gly Ile Trp Glu Gly Gly Pro Ser Lys Asp Ser Leu
65 70 75 80

Tyr Val Ser Ser Leu Tyr Phe Thr Met Thr Ser Leu Thr Thr Ile Gly
85 90 95

Phe Gly Asn Ile Ala Pro Thr Thr Asp Val Glu Lys Met Phe Ser Val
100 105 110

Ala Met Met Met Val Gly
115

<210> 50

<211> 68

<212> PRT

<213> Homo sapiens

<400> 50

Gly Tyr Gly His Ala Ala Pro Gly Thr Asp Ala Gly Lys Ala Phe Cys
1 5 10 15

Met Phe Tyr Ala Val Leu Gly Ile Pro Leu Thr Leu Val Met Phe Gln
20 25 30

Ser Leu Gly Glu Arg Met Asn Thr Phe Val Arg Tyr Leu Leu Lys Arg
35 40 45

Ile Lys Lys Cys Cys Gly Met Arg Asn Thr Asp Val Ser Met Glu Asn
 50 55 60

Met Val Thr Val
 65

<210> 51
 <211> 55
 <212> PRT
 <213> Homo sapiens

<400> 51

Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu Gly Lys Tyr Leu Cys
 1 5 10 15

Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met Phe Leu Val Leu Thr
 20 25 30

Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser Thr Ser Tyr Asn Arg
 35 40 45

Phe Arg Lys Phe Pro Phe Phe
 50 55

<210> 52
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 52

Lys Lys Gln Val Ser Gln Thr Lys Ile Arg Val Ile Ser Thr Ile Leu
 1 5 10 15

Phe Ile Leu Ala Gly Cys Ile Val Phe Val Thr Ile Pro Ala Val Ile
 20 25 30

Phe Lys Tyr Ile Glu Gly Trp Thr Ala Leu Glu Ser Ile Tyr
 35 40 45

<210> 53
 <211> 35
 <212> PRT
 <213> Homo sapiens

<400> 53

Gly Tyr Gly Asn Leu Ala Pro Ser Thr Glu Ala Gly Gln Val Phe Cys
 1 5 10 15

Val Phe Tyr Ala Leu Leu Gly Ile Pro Leu Asn Val Ile Phe Leu Asn
 20 25 30

His Leu Gly
 35

<210> 54
 <211> 35
 <212> PRT
 <213> Homo sapiens

<400> 54

Gly Tyr Gly Asn Leu Ala Pro Ser Thr Glu Ala Gly Gln Val Phe Cys

1 5 10 15
 Val Phe Tyr Ala Leu Leu Gly Ile Pro Leu Asn Val Ile Phe Leu Asn
 20 25 30
 His Leu Gly
 35
 <210> 55
 <211> 74
 <212> PRT
 <213> Homo sapiens
 <400> 55
 Asn Glu Asp Ile Ile Glu Ile Asn His Leu Ser Phe Phe Gly Tyr Cys
 1 5 10 15
 Cys Tyr Gln Glu Val Arg Leu Leu Leu Phe Thr Ile Leu Gly Glu Cys
 20 25 30
 Trp Gly Ser Phe Lys Ser Phe Tyr Phe Val Phe Ser Thr Met Ile Ser
 35 40 45
 Leu Asn Pro Thr Gly Gln Gly Thr Arg Val Gly Phe Cys His Tyr Gln
 50 55 60
 Ser Tyr Leu Phe Leu His Ile Ser Cys Tyr
 65 70
 <210> 56
 <211> 66
 <212> PRT
 <213> Homo sapiens
 <400> 56
 Thr Pro Cys Ser Pro Ile Ser Ser Ile Thr Pro Phe Thr Phe Tyr Leu
 1 5 10 15
 Ile Phe Thr Ser Ser Ile Ile Thr Phe His Cys Phe Ser Glu Leu Leu
 20 25 30
 Phe Leu Glu Ala Lys Leu Pro Val Ser Ile Ile His Phe Cys Lys Ala
 35 40 45
 Ser Leu Gly Phe Thr Thr Gly Arg Arg Gly Arg Gln Arg Asn Asp Ile
 50 55 60
 Leu Cys
 65
 <210> 57
 <211> 35
 <212> PRT
 <213> Homo sapiens
 <400> 57
 Asn Asn Asp Ile Glu Thr Lys Leu Gly Asn Ser Phe Leu Arg Ala Phe
 1 5 10 15
 Ser Glu Gln Arg Leu Arg Phe Ser Gly Met Lys Asn Asn Met Gly Val
 20 25 30

Glu Gly Cys
35

<210> 58
<211> 45
<212> PRT
<213> Homo sapiens

<400> 58

Lys Glu Ala Ser Ala Leu Gly Val Gln Asn Ile Gly Gly Ile Phe Ile
1 5 10 15

Val Leu Ala Ala Gly Leu Val Leu Ser Val Phe Val Ala Val Gly Glu
20 25 30

Phe Leu Tyr Lys Ser Lys Lys Asn Ala Gln Leu Glu Lys
35 40 45

<210> 59
<211> 40
<212> PRT
<213> Homo sapiens

<400> 59

Tyr Leu Leu Gly Leu Pro Val Glu Lys Ile Phe Arg Asp Lys Leu Gly
1 5 10 15

Leu Leu Thr Ser Leu Arg Gln Ala Pro Val Arg Tyr Leu Leu Lys Pro
20 25 30

Asp Trp Trp Tyr Ala Gly Lys Cys
35 40

<210> 60
<211> 57
<212> PRT
<213> Homo sapiens

<400> 60

Pro Val Phe Ile Arg Arg Tyr Phe Leu Phe Tyr His Trp Pro Gln Ile
1 5 10 15

Val Asn Leu His Met Gln Lys Pro Arg Lys Glu Arg Phe Lys Ser Ala
20 25 30

Leu Ser Lys Glu Arg Phe Lys Ser Val Ser Ile His Thr Thr Gln Ser
35 40 45

Ser Tyr Lys Cys Phe Gly Leu Ala Val
50 55

<210> 61
<211> 57
<212> PRT
<213> Homo sapiens

<400> 61

Asn Leu Phe Gln Val Lys Met Asn Trp Asn Met Ile Arg Thr Ser Ser
1 5 10 15

Trp Cys Ser Asp Leu Lys Lys Cys Met Tyr Gln Cys Tyr Gln Val Cys

20

25

30

Ile Thr Ser Arg Tyr Tyr Ile Met Phe Leu Gly Trp Phe Phe Ile Ile
 35 40 45

Thr Ala Thr Ala Pro Cys Trp Leu Ile
 50 55

<210> 62
 <211> 56
 <212> PRT
 <213> Homo sapiens

<400> 62

Val Trp Arg Phe Ser Leu Phe Arg Phe Ile Phe Asn Glu Glu Ile Leu
 1 5 10 15

Thr Ser Ala Val Leu Leu Ile His Ser Lys Leu Pro Thr Arg His Met
 20 25 30

Val Pro Lys Val Val Cys Leu Lys Phe Leu His Pro Leu Pro Arg Leu
 35 40 45

Ala Tyr Leu Ser Arg Tyr Ser Ser
 50 55

<210> 63
 <211> 115
 <212> PRT
 <213> Homo sapiens

<400> 63

Leu Asn Val Asn Val Gly Gly His Ser Tyr Gln Leu Asp Tyr Cys Glu
 1 5 10 15

Leu Ala Gly Phe Pro Lys Thr Arg Leu Gly Arg Leu Ala Thr Ser Thr
 20 25 30

Ser Arg Ser Arg Gln Leu Ser Leu Cys Asp Asp Tyr Glu Glu Gln Thr
 35 40 45

Asp Glu Tyr Phe Phe Asp Arg Asp Pro Ala Val Phe Gln Leu Val Tyr
 50 55 60

Asn Phe Tyr Leu Ser Gly Val Leu Leu Val Leu Asp Gly Leu Cys Pro
 65 70 75 80

Arg Arg Phe Leu Glu Glu Leu Gly Tyr Trp Gly Val Arg Leu Lys Tyr
 85 90 95

Thr Pro Arg Cys Cys Arg Ile Cys Phe Glu Glu Arg Arg Asp Glu Leu
 100 105 110

Ser Glu Arg
 115

<210> 64
 <211> 115
 <212> PRT
 <213> Homo sapiens

<400> 64

Arg His Ser Val Leu Ser Asn Val Ala Thr Glu Lys Met Val Met Leu
 1 5 10 15
 Leu Val Phe Ile Cys Val Ala Met Ala Ile Phe Ser Ala Leu Ser Gln
 20 25 30
 Leu Leu Glu His Gly Leu Asp Leu Glu Thr Ser Asn Lys Asp Phe Thr
 35 40 45
 Ser Ile Pro Ala Ala Cys Trp Trp Val Ile Ile Ser Met Thr Thr Val .
 50 55 60
 Gly Tyr Gly Asp Met Tyr Pro Ile Thr Val Pro Gly Arg Ile Leu Gly
 65 70 75 80
 Gly Val Cys Val Val Ser Gly Ile Val Leu Leu Ala Leu Pro Ile Thr
 85 90 95
 Phe Ile Tyr His Ser Phe Val Gln Cys Tyr His Glu Leu Lys Phe Arg
 100 105 110

Ser Ala Arg
 115

<210> 65
 <211> 200
 <212> PRT
 <213> Homo sapiens
 <400> 65

Thr Thr Met Val Pro Thr Ala Leu Gly Val Ser Ser Cys Pro Ala Pro
 1 5 10 15
 Trp Glu Thr Pro Ser Ile Lys Gly Leu Tyr Tyr Arg Arg Val Arg Lys
 20 25 30
 Val Gly Ala Leu Asp Ala Ser Pro Val Asp Leu Lys Lys Glu Ile Leu .
 35 40 45
 Ile Asn Val Gly Gly Arg Arg Tyr Leu Leu Pro Trp Ser Thr Leu Asp
 50 55 60
 Arg Phe Pro Leu Ser Arg Leu Ser Lys Leu Arg Leu Cys Arg Ser Tyr
 65 70 75 80
 Glu Glu Ile Val Gln Leu Cys Asp Asp Tyr Asp Glu Asp Ser Gln Glu
 85 90 95
 Phe Phe Phe Asp Arg Ser Pro Ser Ala Phe Gly Val Ile Val Ser Phe
 100 105 110
 Leu Ala Ala Gly Lys Leu Val Leu Leu Gln Glu Met Cys Ala Leu Ser
 115 120 125
 Phe Gln Glu Glu Leu Ala Tyr Trp Gly Ile Glu Glu Ala His Leu Glu
 130 135 140
 Arg Cys Cys Leu Arg Lys Leu Leu Arg Lys Leu Glu Glu Leu Glu Glu
 145 150 155 160
 Leu Ala Lys Leu His Arg Glu Asp Val Leu Arg Gln Gln Arg Glu Thr
 165 170 175
 Arg Arg Pro Ala Ser His Ser Ser Arg Trp Gly Leu Cys Met Asn Arg

180

185

190

Leu Arg Glu Met Val Glu Asn Pro
195 200

<210> 66
<211> 43
<212> PRT
<213> Homo sapiens

<400> 66

Leu Gln His Ala Leu Asp Ala Asp Asn Ala Gly Val Ser Pro Ile Arg
1 5 10 15

Asn Ser Ser Asn Asn Ser Ser His Trp Asp Leu Gly Ser Ala Phe Phe
20 25 30

Phe Ala Gly Thr Val Leu Thr Thr Met Arg Tyr
35 40

<210> 67
<211> 41
<212> PRT
<213> Homo sapiens

<400> 67

Gly Phe Tyr Thr His Phe Phe Leu Leu Phe Ser Val Leu Asp His Thr
1 5 10 15

Trp Lys Gly Leu Glu Ser Tyr Tyr Leu Cys Phe Tyr Thr Lys Lys Lys
20 25 30

Leu Ser Lys Leu Lys Leu Asn Asp Phe
35 40

<210> 68
<211> 27
<212> PRT
<213> Homo sapiens

<400> 68

Glu Gly Trp Ser Tyr Thr Glu Gly Phe Tyr Phe Ala Phe Ile Thr Leu
1 5 10 15

Ser Thr Val Gly Phe Gly Asp Tyr Val Ile Gly
20 25

<210> 69
<211> 35
<212> PRT
<213> Homo sapiens

<400> 69

Gly Tyr Gly Asn Leu Ala Pro Ser Thr Glu Ala Gly Gln Val Phe Cys
1 5 10 15

Val Phe Tyr Ala Leu Leu Gly Ile Pro Leu Asn Val Ile Phe Leu Asn
20 25 30

His Leu Gly
35

<210> 70
 <211> 140
 <212> PRT
 <213> Homo sapiens

<400> 70

Ile Met Lys Ser Cys His Gln Arg Gln Leu Arg Arg Arg Gly Ala Leu
 1 5 10 15

Pro Gln Glu Ser Leu Lys Asp Ala Gly Gln Cys Glu Val Asp Ser Leu
 20 25 30

Ala Gly Trp Lys Pro Ser Val Tyr Tyr Val Met Leu Ile Leu Cys Thr
 35 40 45

Ala Ser Ile Leu Ile Ser Cys Cys Ala Ser Ala Met Tyr Thr Pro Ile
 50 55 60

Glu Gly Trp Ser Tyr Phe Asp Ser Leu Tyr Phe Cys Phe Val Ala Phe
 65 70 75 80

Ser Thr Ile Gly Phe Gly Asp Leu Val Ser Ser Gln Asn Ala His Tyr
 85 90 95

Glu Ser Gln Gly Leu Tyr Arg Phe Ala Asn Phe Val Phe Ile Leu Met
 100 105 110

Gly Val Cys Cys Ile Tyr Ser Leu Phe Asn Val Ile Ser Ile Leu Ile
 115 120 125

Lys Gln Ser Leu Asn Trp Ile Leu Arg Lys Met Asp
 130 135 140

<210> 71
 <211> 36
 <212> PRT
 <213> Homo sapiens

<400> 71

Ser Leu Leu Thr Ser Phe Tyr Phe Cys Ile Val Thr Phe Ser Thr Val
 1 5 10 15

Gly Tyr Gly Asp Val Thr Pro Lys Ile Trp Pro Ser Gln Leu Leu Val
 20 25 30

Val Ile Met Ile
 35

<210> 72
 <211> 18
 <212> PRT
 <213> Homo sapiens

<400> 72

Trp Lys Phe Pro Gly Ser Phe Tyr Phe Ala Ile Thr Val Ile Thr Thr
 1 5 10 15

Ile Gly

<210> 73

<211> 543
 <212> PRT
 <213> Homo sapiens

<400> 73

Met Lys Phe Pro Ile Glu Thr Pro Arg Lys Gln Val Asn Trp Asp Pro
 1 5 10 15
 Lys Val Ala Val Pro Ala Ala Ala Pro Val Cys Gln Pro Lys Ser Ala
 20 25 30
 Thr Asn Gly Gln Pro Pro Ala Pro Ala Pro Thr Pro Thr Pro Arg Leu
 35 40 45
 Ser Ile Ser Ser Arg Ala Thr Val Val Ala Arg Met Glu Gly Thr Ser
 50 55 60
 Gln Gly Gly Leu Gln Thr Val Met Lys Trp Lys Thr Val Val Ala Ile
 65 70 75 80
 Phe Val Val Val Val Val Tyr Leu Val Thr Gly Gly Leu Val Phe Arg
 85 90 95
 Ala Leu Glu Gln Pro Phe Glu Ser Ser Gln Lys Asn Thr Ile Ala Leu
 100 105 110
 Glu Lys Ala Glu Phe Leu Arg Asp His Val Cys Val Ser Pro Gln Glu
 115 120 125
 Leu Glu Thr Leu Ile Gln His Ala Leu Asp Ala Asp Asn Ala Gly Val
 130 135 140
 Ser Pro Ile Gly Asn Ser Ser Asn Asn Ser Ser His Trp Asp Leu Gly
 145 150 155 160
 Ser Ala Phe Phe Phe Ala Gly Thr Val Ile Thr Thr Ile Gly Tyr Gly
 165 170 175
 Asn Ile Ala Pro Ser Thr Glu Gly Gly Lys Ile Phe Cys Ile Leu Tyr
 180 185 190
 Ala Ile Phe Gly Ile Pro Leu Phe Gly Phe Leu Leu Ala Gly Ile Gly
 195 200 205
 Asp Gln Leu Gly Thr Ile Phe Gly Lys Ser Ile Ala Arg Val Glu Lys
 210 215 220
 Val Phe Arg Lys Lys Gln Val Ser Gln Thr Lys Ile Arg Val Ile Ser
 225 230 235 240
 Thr Ile Leu Phe Ile Leu Ala Gly Cys Ile Val Phe Val Thr Ile Pro
 245 250 255
 Ala Val Ile Phe Lys Tyr Ile Glu Gly Trp Thr Ala Leu Glu Ser Ile
 260 265 270
 Tyr Phe Val Val Val Thr Leu Thr Thr Val Gly Phe Gly Asp Phe Val
 275 280 285
 Ala Gly Gly Asn Ala Gly Ile Asn Tyr Arg Glu Trp Tyr Lys Pro Leu
 290 295 300
 Val Trp Phe Trp Ile Leu Val Gly Leu Ala Tyr Phe Ala Ala Val Leu
 305 310 315 320

Ser Met Ile Gly Asp Trp Leu Arg Val Leu Ser Lys Lys Thr Lys Glu
325 330 335

Glu Val Gly Glu Ile Lys Ala His Ala Ala Glu Trp Lys Ala Asn Val
340 345 350

Thr Ala Glu Phe Arg Glu Thr Arg Arg Arg Leu Ser Val Glu Ile His
355 360 365

Asp Lys Leu Gln Arg Ala Ala Thr Ile Arg Ser Met Glu Arg Arg Arg
370 375 380

Leu Gly Leu Asp Gln Arg Ala His Ser Leu Asp Met Leu Ser Pro Glu
385 390 395 400

Lys Arg Ser Val Phe Ala Ala Leu Asp Thr Gly Arg Phe Lys Ala Ser
405 410 415

Ser Gln Glu Ser Ile Asn Asn Arg Pro Asn Asn Leu Arg Leu Lys Gly
420 425 430

Pro Glu Gln Leu Asn Lys His Gly Gln Gly Ala Ser Glu Asp Asn Ile
435 440 445

Ile Asn Lys Phe Gly Ser Thr Ser Arg Leu Thr Lys Arg Lys Asn Lys
450 455 460

Asp Leu Lys Lys Thr Leu Pro Glu Asp Val Gln Lys Ile Tyr Lys Thr
465 470 475 480

Phe Arg Asn Tyr Ser Leu Asp Glu Glu Lys Lys Glu Glu Glu Thr Glu
485 490 495

Lys Met Cys Asn Ser Asp Asn Ser Ser Thr Ala Met Leu Thr Asp Cys
500 505 510

Ile Gln Gln His Ala Glu Leu Glu Asn Gly Met Ile Pro Thr Asp Thr
515 520 525

Lys Asp Arg Glu Pro Glu Asn Asn Ser Leu Leu Glu Asp Arg Asn
530 535 540

<210> 74

<211> 534

<212> PRT

<213> Homo sapiens

<400> 74

Ala Ala Ser Thr Glu Thr Pro Pro Thr Pro Gly Ala Val Gly Leu Gly
1 5 10 15

Ala Ala Pro Gly Gly Pro Ala Met Ala Gly Arg Gly Phe Ser Trp Gly
20 25 30

Pro Gly His Leu Asn Glu Asp Asn Ala Arg Phe Leu Leu Leu Ala Ala
35 40 45

Leu Ile Val Leu Tyr Leu Leu Gly Gly Ala Ala Val Phe Ser Ala Leu
50 55 60

Glu Leu Ala His Glu Arg Gln Ala Lys Gln Arg Trp Glu Glu Arg Leu
65 70 75 80

Ala Asn Phe Ser Arg Gly His Asn Leu Ser Arg Asp Glu Leu Arg Gly
85 90 95

Phe Leu Arg His Tyr Glu Glu Ala Thr Arg Ala Gly Ile Arg Val Asp
100 105 110

Asn Val Arg Pro Arg Trp Asp Phe Thr Gly Ala Phe Tyr Phe Val Gly
115 120 125

Thr Val Val Ser Thr Ile Gly Phe Gly Met Thr Thr Pro Ala Thr Val
130 135 140

Gly Gly Lys Ile Phe Leu Ile Phe Tyr Gly Leu Val Gly Cys Ser Ser
145 150 155 160

Thr Ile Leu Phe Phe Asn Leu Phe Leu Glu Arg Leu Ile Thr Ile Ile
165 170 175

Ala Tyr Ile Met Lys Ser Cys His Gln Arg Gln Leu Arg Arg Arg Gly
180 185 190

Ala Leu Pro Gln Glu Ser Leu Lys Asp Ala Gly Gln Cys Glu Val Asp
195 200 205

Ser Leu Ala Gly Trp Lys Pro Ser Val Tyr Tyr Val Met Leu Ile Leu
210 215 220

Cys Thr Ala Ser Ile Leu Ile Ser Cys Cys Ala Ser Ala Met Tyr Thr
225 230 235 240

Pro Ile Glu Gly Trp Ser Tyr Phe Asp Ser Leu Tyr Phe Cys Phe Val
245 250 255

Ala Phe Ser Thr Ile Gly Phe Gly Asp Leu Val Ser Ser Gln Asn Ala
260 265 270

His Tyr Glu Ser Gln Gly Leu Tyr Arg Phe Ala Asn Phe Val Phe Ile
275 280 285

Leu Met Gly Val Cys Cys Ile Tyr Ser Leu Phe Asn Val Ile Ser Ile
290 295 300

Leu Ile Lys Gln Ser Leu Asn Trp Ile Leu Arg Lys Met Asp Ser Gly
305 310 315 320

Cys Cys Pro Gln Cys Gln Arg Gly Leu Leu Arg Ser Arg Arg Asn Val
325 330 335

Val Met Pro Gly Ser Val Arg Asn Arg Cys Asn Ile Ser Ile Glu Thr
340 345 350

Asp Gly Val Ala Glu Ser Asp Thr Asp Gly Arg Arg Leu Ser Gly Glu
355 360 365

Met Ile Ser Met Lys Asp Leu Leu Ala Ala Asn Lys Ala Ser Leu Ala
370 375 380

Ile Leu Gln Lys Gln Leu Ser Glu Met Ala Asn Gly Cys Pro His Gln
385 390 395 400

Thr Ser Thr Leu Ala Arg Asp Asn Glu Phe Ser Gly Gly Val Gly Ala
405 410 415

Phe Ala Ile Met Asn Asn Arg Leu Ala Glu Thr Ser Gly Asp Arg Lys
420 425 430

Pro Gly Met Asp Ala Gly Gln Arg Pro Glu Asn Gly Gly Leu Pro Pro
 435 440 445
 Arg Gly Arg Ala Gln Pro Cys Ala Leu Ala Leu Phe Leu Leu Gly Ala .
 450 455 460
 Val Pro Gly Ser Leu Arg Lys His Leu Lys Ser Asp Leu Gly Ser Asn
 465 470 475 480
 Gln Gln Pro Pro Ser Arg Asp Gly Gly Pro Glu Ala Ser Met Leu Val
 485 490 495
 Ser Ser Leu Phe Phe Lys Ser Lys Phe Ser Leu Phe Lys Thr Asn His
 500 505 510
 Lys Ser Ser Ile Arg His Cys Leu Val Ser Leu Ile Leu Phe Gln Ser
 515 520 525
 Phe Ser Cys Leu Arg Arg
 530

<210> 75
 <211> 384
 <212> PRT
 <213> Homo sapiens
 <400> 75

Met Glu Val Ser Gly His Pro Gln Ala Arg Arg Cys Cys Pro Glu Ala
 1 5 10 15
 Leu Gly Lys Leu Phe Pro Gly Leu Cys Phe Leu Cys Phe Leu Val Thr .
 20 25 30
 Tyr Ala Leu Val Gly Ala Val Val Phe Ser Ala Ile Glu Asp Gly Gln
 35 40 45
 Val Leu Val Ala Ala Asp Asp Gly Glu Phe Glu Lys Phe Leu Glu Glu
 50 55 60
 Leu Cys Arg Ile Leu Asn Cys Ser Glu Thr Val Val Glu Asp Arg Lys
 65 70 75 80
 Gln Asp Leu Gln Gly His Leu Gln Lys Val Lys Pro Gln Trp Phe Asn
 85 90 95
 Arg Thr Thr His Trp Ser Phe Leu Ser Ser Leu Phe Phe Cys Cys Thr
 100 105 110
 Val Phe Ser Thr Val Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu
 115 120 125
 Gly Lys Tyr Leu Cys Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met
 130 135 140
 Phe Leu Val Leu Thr Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser
 145 150 155 160
 Thr Ser Tyr Asn Arg Phe Arg Lys Phe Pro Phe Phe Thr Arg Pro Leu
 165 170 175
 Leu Ser Lys Trp Cys Pro Lys Ser Leu Phe Lys Lys Lys Pro Asp Pro
 180 185 190

Lys Pro Ala Asp Glu Ala Val Pro Gln Ile Ile Ile Ser Ala Glu Glu
195 200 205

Leu Pro Gly Pro Lys Leu Gly Thr Cys Pro Ser Arg Pro Ser Cys Ser
210 215 220

Met Glu Leu Phe Glu Arg Ser His Ala Leu Glu Lys Gln Asn Thr Leu
225 230 235 240

Gln Leu Pro Pro Gln Ala Met Glu Arg Ser Asn Ser Cys Pro Glu Leu
245 250 255

Val Leu Gly Arg Leu Ser Tyr Ser Ile Ile Ser Asn Leu Asp Glu Val
260 265 270

Gly Gln Gln Val Glu Arg Leu Asp Ile Pro Leu Pro Ile Ile Ala Leu
275 280 285

Ile Val Phe Ala Tyr Ile Ser Cys Ala Ala Ala Ile Leu Pro Phe Trp
290 295 300

Glu Thr Gln Leu Asp Phe Glu Asn Ala Phe Tyr Phe Cys Phe Val Thr
305 310 315 320

Leu Thr Thr Ile Gly Phe Gly Asp Thr Val Leu Glu His Pro Asn Phe
325 330 335

Phe Leu Phe Phe Ser Ile Tyr Ile Ile Val Gly Met Glu Ile Val Phe
340 345 350

Ile Ala Phe Lys Leu Val Gln Asn Arg Leu Ile Asp Ile Tyr Lys Asn
355 360 365

Val Met Leu Phe Phe Ala Lys Gly Lys Phe Tyr His Leu Val Lys Lys
370 375 380

<210> 76

<211> 300

<212> PRT

<213> Homo sapiens

<400> 76

Met Glu Val Ser Gly His Pro Gln Ala Arg Arg Cys Cys Pro Glu Ala
1 5 10 15

Leu Gly Lys Leu Phe Pro Gly Leu Cys Phe Leu Cys Phe Leu Val Thr
20 25 30

Tyr Ala Leu Val Gly Ala Val Val Phe Ser Ala Ile Glu Asp Gly Gln
35 40 45

Val Leu Val Ala Ala Asp Asp Gly Glu Phe Glu Lys Phe Leu Glu Glu
50 55 60

Leu Cys Arg Ile Leu Asn Cys Ser Glu Thr Val Val Glu Asp Arg Lys
65 70 75 80

Gln Asp Leu Gln Gly His Leu Gln Lys Val Lys Pro Gln Trp Phe Asn
85 90 95

Arg Thr Thr His Trp Ser Phe Leu Ser Ser Leu Phe Phe Cys Cys Thr
100 105 110

Val Phe Ser Thr Val Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu

115

120

125

Gly Lys Tyr Leu Cys Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met
130 135 140

Phe Leu Val Leu Thr Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser
145 150 155 160

Thr Ser Tyr Asn Arg Ser Asn Ser Cys Pro Glu Leu Val Leu Gly Arg
165 170 175

Leu Ser Tyr Ser Ile Ile Ser Asn Leu Asp Glu Val Gly Gln Gln Val
180 185 190

Glu Arg Leu Asp Ile Pro Leu Pro Ile Ile Ala Leu Ile Val Phe Ala
195 200 205

Tyr Ile Ser Cys Ala Ala Ala Ile Leu Pro Phe Trp Glu Thr Gln Leu
210 215 220

Asp Phe Glu Asn Ala Phe Tyr Phe Cys Phe Val Thr Leu Thr Thr Ile
225 230 235 240

Gly Phe Gly Asp Thr Val Leu Glu His Pro Asn Phe Phe Leu Phe Phe
245 250 255

Ser Ile Tyr Ile Ile Val Gly Met Glu Ile Val Phe Ile Ala Phe Lys
260 265 270

Leu Val Gln Asn Arg Leu Ile Asp Ile Tyr Lys Asn Val Met Leu Phe
275 280 285

Phe Ala Lys Gly Lys Phe Tyr His Leu Val Lys Lys
290 295 300

<210> 77

<211> 315

<212> PRT

<213> Homo sapiens

<400> 77

Met Glu Val Ser Gly His Pro Gln Ala Arg Arg Cys Cys Pro Glu Ala
1 5 10 15

Leu Gly Lys Leu Phe Pro Gly Leu Cys Phe Leu Cys Phe Leu Val Thr
20 25 30

Tyr Ala Leu Val Gly Ala Val Val Phe Ser Ala Ile Glu Asp Gly Gln
35 40 45

Val Leu Val Ala Ala Asp Asp Gly Glu Phe Glu Lys Phe Leu Glu Glu
50 55 60

Leu Cys Arg Ile Leu Asn Cys Ser Glu Thr Val Val Glu Asp Arg Lys
65 70 75 80

Gln Asp Leu Gln Gly His Leu Gln Lys Val Lys Pro Gln Trp Phe Asn
85 90 95

Arg Thr Thr His Trp Ser Phe Leu Ser Ser Leu Phe Phe Cys Cys Thr
100 105 110

Val Phe Ser Thr Val Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu
115 120 125

Gly Lys Tyr Leu Cys Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met
130 135 140

Phe Leu Val Leu Thr Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser
145 150 155 160

Thr Ser Tyr Asn Arg Phe Arg Lys Phe Pro Phe Phe Thr Arg Pro Leu
165 170 175

Leu Ser Lys Trp Ser Asn Ser Cys Pro Glu Leu Val Leu Gly Arg Leu
180 185 190

Ser Tyr Ser Ile Ile Ser Asn Leu Asp Glu Val Gly Gln Gln Val Glu
195 200 205

Arg Leu Asp Ile Pro Leu Pro Ile Ile Ala Leu Ile Val Phe Ala Tyr
210 215 220

Ile Ser Cys Ala Ala Ala Ile Leu Pro Phe Trp Glu Thr Gln Leu Asp
225 230 235 240

Phe Glu Asn Ala Phe Tyr Phe Cys Phe Val Thr Leu Thr Thr Ile Gly
245 250 255

Phe Gly Asp Thr Val Leu Glu His Pro Asn Phe Phe Leu Phe Phe Ser
260 265 270

Ile Tyr Ile Ile Val Gly Met Glu Ile Val Phe Ile Ala Phe Lys Leu
275 280 285

Val Gln Asn Arg Leu Ile Asp Ile Tyr Lys Asn Val Met Leu Phe Phe
290 295 300

Ala Lys Gly Lys Phe Tyr His Leu Val Lys Lys
305 310 315

<210> 78

<211> 286

<212> PRT

<213> Homo sapiens

<400> 78

Met Glu Val Ser Gly His Pro Gln Ala Arg Arg Cys Cys Pro Glu Ala
1 5 10 15

Leu Gly Lys Leu Phe Pro Gly Leu Cys Phe Leu Cys Phe Leu Val Thr
20 25 30

Tyr Ala Leu Val Gly Ala Val Val Phe Ser Ala Ile Glu Asp Gly Gln
35 40 45

Val Leu Val Ala Ala Asp Asp Gly Glu Phe Glu Lys Phe Leu Glu Glu
50 55 60

Leu Cys Arg Ile Leu Asn Cys Ser Glu Thr Val Val Glu Asp Arg Lys
65 70 75 80

Gln Asp Leu Gln Gly His Leu Gln Lys Val Lys Pro Gln Trp Phe Asn
85 90 95

Arg Thr Thr His Trp Ser Phe Leu Ser Ser Leu Phe Phe Cys Cys Thr
100 105 110

Val Phe Ser Thr Val Gly Tyr Gly Tyr Ile Tyr Pro Val Thr Arg Leu
 115 120 125

Gly Lys Tyr Leu Cys Met Leu Tyr Ala Leu Phe Gly Ile Pro Leu Met
 130 135 140

Phe Leu Val Leu Thr Asp Thr Gly Asp Ile Leu Ala Thr Ile Leu Ser
 145 150 155 160

Thr Ser Tyr Asn Arg Phe Arg Lys Phe Pro Phe Phe Thr Arg Pro Leu
 165 170 175

Leu Ser Lys Trp Leu Asp Ile Pro Leu Pro Ile Ile Ala Leu Ile Val
 180 185 190

Phe Ala Tyr Ile Ser Cys Ala Ala Ala Ile Leu Pro Phe Trp Glu Thr
 195 200 205

Gln Leu Asp Phe Glu Asn Ala Phe Tyr Phe Cys Phe Val Thr Leu Thr
 210 215 220

Thr Ile Gly Phe Gly Asp Thr Val Leu Glu His Pro Asn Phe Phe Leu
 225 230 235 240

Phe Phe Ser Ile Tyr Ile Ile Val Gly Met Glu Ile Val Phe Ile Ala
 245 250 255

Phe Lys Leu Val Gln Asn Arg Leu Ile Asp Ile Tyr Lys Asn Val Met
 260 265 270

Leu Phe Phe Ala Lys Gly Lys Phe Tyr His Leu Val Lys Lys
 275 280 285

<210> 79
 <211> 20
 <212> DNA
 <213> Homo sapiens

<400> 79
 ccctccgtgt actacgtcat

20

<210> 80
 <211> 21
 <212> DNA
 <213> Homo sapiens

<400> 80
 cctcaggatc cagttcaagg a

21

<210> 81
 <211> 21
 <212> DNA
 <213> Homo sapiens

<400> 81
 gggaatattg ctccgagcac t

21

<210> 82
 <211> 23
 <212> DNA
 <213> Homo sapiens

<400> 82
ccactcttgc aatgcttttc cca

23

<210> 83
<211> 20
<212> DNA
<213> Homo sapiens

<400> 83
ccctccgtgt actacgtcat

20

<210> 84
<211> 21
<212> DNA
<213> Homo sapiens

<400> 84
cctcaggatc cagttcaagg a

21

<210> 85
<211> 22
<212> DNA
<213> Homo sapiens

<400> 85
gctatggcta catctacccc gt

22

<210> 86
<211> 20
<212> DNA
<213> Homo sapiens

<400> 86
tgccaggatg tcgcctgtgt

20

<210> 87
<211> 1576
<212> DNA
<213> Homo sapiens

<400> 87
ctccgcctct ccctgccggg cggctcttcg gctggagctt agaaaggagc gcttccccgg

60

actcggctcg gctccgaggc tccgaagccg acgccgccag ctacagccccg ggggcgggag

120

caggactgcc cgcacagccc gcacctagga ggcgccgatc ccgaacgcct catgggacgc

180

ccccgggggc tctctccacg ccttgctgcc gcgtcccggc cctaggcgcc cgggatccac

240

ggcccccccc gccgtagccg ccgccgcctg ccgcgcccct cctgctgctg ctgctgctgc

300

cgccgttcgc acctcaacga ggacaccggc cgcttcgtgc tgctggcggc gctcatcggc

360

ctctacctgg tggcgggtgc cacagtcttc tcggcgctcg agagccccgg cgaggcggag

420

gcgcggggcg gctggggcg cagctgcgc aacttcagcg ctgcgcacgg cgtggccgag

480

ccagagctgc gcgccttcct ccggcactac gaggcgcgc tggccgccgg cgtccgcgcc

540

gacgcgctgc gcccgcgctg ggacttcccc ggcgcttct acttcgtggg caccgtggtg

600

tcaaccatag gtttcggcat gaccaccccc gcgacggtgg gcgggaaggc cttcctcatc 660
 gcctacgggc tggtcggctg cgctgggacc atcctgttct tcaacctctt cctggagcgc 720
 atcatctcgc tgctggcctt catcatgcgc gcctgccggg agcgccagct gcgccgcagc 780
 ggcttgctgc ccgccacctt ccgccgggc tccgcgctct cggaggccga cagcctggcg 840
 ggctggaagc cctcgggtgta ccacgtgctg ctcatcctgg gcctgttcgc cgtgctgctg 900
 tcctgctgcg cctcggccat gtacaccagc gtggagggtt gggactacgt ggactcgctc 960
 tacttctgct tcgtcacctt cagcaccatc ggcttcgggg acctggtgag cagccagcac 1020
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 gtgtgctgca ttactcgtt cttcaacgtc atctccatcc tcatcaagca ggtgctcaac 1140
 tggatgctgc gcaagctgag ctgccgctgc tgcgcgcgct gctgcccggc tcctggcgcg 1200
 cccctggccc ggcgcaatgc catcacccca ggctcccggc tgcgccgcg cctggccgcg 1260
 ctcggtgccg accccgggc ccgcgacagc gacgccgagg gccgccgct ctcgggcgag 1320
 ctcatctcca tgcgcgacct cacggcctcc aacaagggtg cgctggcgct gctgcagaag 1380
 cagctgtcgg agacggccaa cggtaccgc cgcagcgtgt gcgtcaacac gcgccagaac 1440
 ggcttctcgg gcggcggtgg gcgcgtgggc atcatgaaca accggctggc cgagaccagc 1500
 gcctccaggt agaccgcccg tccgcccgc cgggggaccc tctccaggcc gcggggccgc 1560
 cgggcgtggt ttgctt 1576

<210> 88
 <211> 297
 <212> PRT
 <213> Homo sapiens

<400> 88

Met Thr Thr Pro Ala Thr Val Gly Gly Lys Ala Phe Leu Ile Ala Tyr
 1 5 10 15
 Gly Leu Phe Gly Cys Ala Gly Thr Ile Leu Phe Phe Asn Leu Phe Leu
 20 25 30
 Glu Arg Ile Ile Ser Leu Leu Ala Phe Ile Met Arg Ala Cys Arg Glu
 35 40 45
 Arg Gln Leu Arg Arg Ser Gly Leu Leu Pro Ala Thr Phe Arg Arg Gly
 50 55 60
 Ser Ala Leu Ser Glu Ala Asp Ser Leu Ala Gly Trp Lys Pro Ser Val
 65 70 75 80
 Tyr His Val Leu Leu Ile Leu Gly Leu Phe Ala Val Leu Leu Ser Cys
 85 90 95
 Cys Ala Ser Ala Met Tyr Thr Ser Val Glu Gly Trp Asp Tyr Val Asp
 100 105 110
 Ser Leu Tyr Phe Cys Phe Val Thr Phe Ser Thr Ile Gly Phe Gly Asp

115

120

125

Leu Val Ser Ser Gln His Ala Ala Tyr Arg Asn Gln Gly Leu Tyr Arg
 130 135 140

Leu Gly Asn Phe Leu Phe Ile Leu Leu Gly Val Cys Cys Ile Tyr Ser
 145 150 155 160

Leu Phe Asn Val Ile Ser Ile Leu Ile Lys Gln Val Leu Asn Trp Met
 165 170 175

Leu Arg Lys Leu Ser Cys Arg Cys Cys Ala Arg Cys Cys Pro Ala Pro
 180 185 190

Gly Ala Pro Leu Ala Arg Arg Asn Ala Ile Thr Pro Gly Ser Arg Leu
 195 200 205

Arg Arg Arg Leu Ala Ala Leu Gly Ala Asp Pro Ala Ala Arg Asp Ser
 210 215 220

Asp Ala Glu Gly Arg Arg Leu Ser Gly Glu Leu Ile Ser Met Arg Asp
 225 230 235 240

Leu Thr Ala Ser Asn Lys Val Ser Leu Ala Leu Leu Gln Lys Gln Leu
 245 250 255

Ser Glu Thr Ala Asn Gly Tyr Pro Arg Ser Val Cys Val Asn Thr Arg
 260 265 270

Gln Asn Gly Phe Ser Gly Gly Val Gly Ala Leu Gly Ile Met Asn Asn
 275 280 285

Arg Leu Ala Glu Thr Ser Ala Ser Arg
 290 295